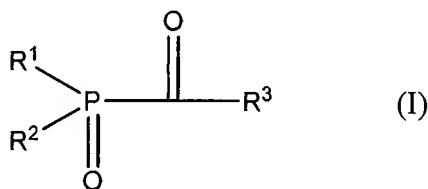


AMENDMENTS TO THE CLAIMS

1. (Original) An energy curable intaglio printing ink, curing by free radical, acrylate chemistry, and including a photoinitiator comprising an acylphosphine oxide, whereby the ink does not fluoresce in at least the visible light wavelength region when exposed to ultraviolet light.

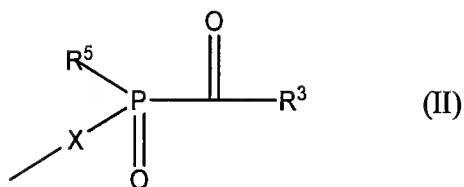
2. (Original) A printing ink according to Claim 1, in which said acylphosphine oxide is a compound of formula (I):



in which:

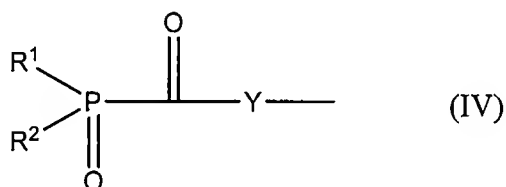
R¹ and R² are independently selected from C₁ — C₁₂ alkyl groups, C₃ — C₇ cycloalkyl groups, aryl groups, aralkyl groups, heterocyclic groups having from 3 to 7 ring atoms, of which at least one is a sulphur or nitrogen atom and groups of formula —COR³,

or R² represents a group of formula —OR⁴, where R⁴ represents a C₁ — C₆ alkyl group, an aryl group, an aralkyl group or a cationic group or atom, or R² represents a group of formula (II):



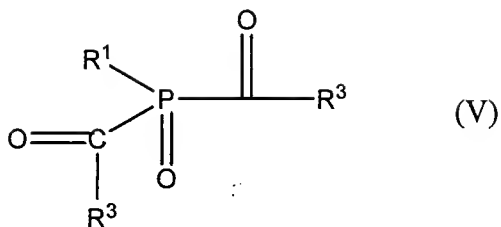
where X represents a C₁ – C₁₈ alkylene group or a biphenyldiyl group, and R⁵ represents any of the groups represented by R¹ or a group of formula –OR⁴, and

R³ represents a C₁ – C₆ alkyl group, an aryl group, a heterocyclic group having from 3 to 7 ring atoms, of which at least one is a sulphur or nitrogen atom, or a group of formula (IV):



where Y represents a C₁ – C₁₈ alkylene group a phenylene group, a cyclohexylene group or a biphenyldiyl group.

3. (Original) A printing ink according to Claim 2, in which said acylphosphine oxide is a compound of formula (V):



in which:

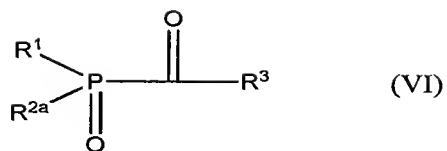
R^1 represents a $\text{C}_1 - \text{C}_{12}$ alkyl group, a cyclohexyl group or an aryl group; and

R^3 is as defined in Claim 2.

4. (Original) A printing ink according to Claim 3, in which each R^3 is independently selected from phenyl groups and phenyl groups having from 1 to 4 halogen and/or $\text{C}_1 - \text{C}_6$ alkyl and/or $\text{C}_1 - \text{C}_6$ alkoxy substituents.

5. (Currently amended) A printing ink according to Claim 4, in which $[\text{R}^*]$ R^1 represents a $\text{C}_1 - \text{C}_{12}$ alkyl group or a phenyl group which is unsubstituted or has from 1 to 3 $\text{C}_1 - \text{C}_6$ alkyl or alkoxy substituents.

6. (Original) A printing ink according to Claim 2, in which said acylphosphine oxide is a compound of formula (VI):

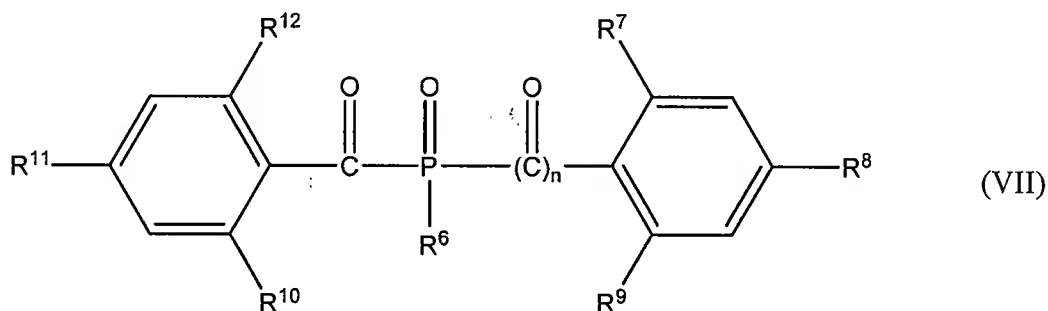


in which:

R¹ and R³ are as defined in Claim 2; and

R^{2a} represents a C₁ – C₁₂ alkyl group, a C₃ – C₇ cycloalkyl group, an aryl group, an aralkyl group, a heterocyclic group having from 3 to 7 ring atoms, of which at least one is a sulphur or nitrogen atom, or a group of formula — OR⁴, where R⁴ is defined in Claim 2.

7. (Original) A printing ink according to Claim 2, in which said acylphosphine oxide is a compound of formula (VII):



in which:

n is 0 or 1;

R⁶ represents a C₁ – C₁₂ alkyl group, a C₁ – C₆ alkoxy group, a phenyl group or a phenyl group having from 1 to 4 substituents selected from C₁ – C₆ alkyl groups, C₁ – C₆ alkoxy groups and halogen atoms; and

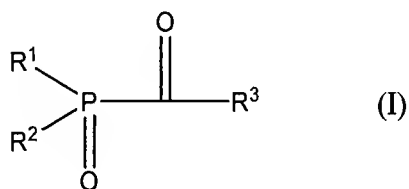
R⁷, R⁸, R⁹, R¹⁰, R¹¹ and R¹² are the same as or different from each other and each represents a hydrogen atom, a C₁ – C₆ alkyl group, a C₁ – C₆ alkoxy group or a halogen atom.

8. (Original) A printing ink according to Claim 2, in which said acylphosphine oxide is 2,4,6-trimethylbenzoyl diphenylphosphine oxide, bis(2,4,6-trimethylbenzoyl) phenylphosphine oxide, ethyl 2,4,6-trimethylbenzoyl diphenylphosphinate or bis(2,6-dimethoxybenzoyl)-2,4,4-trimethylpentylphosphine oxide.

9. (Currently amended) A method of producing a document, which comprises intaglio printing on a substrate which does not fluoresce in at least the visible region under ultraviolet light using an intaglio printing ink, curing by free radical acrylate chemistry, and which includes a photoinitiator comprising an acylphosphine oxide which does not fluoresce in at least the visible light wavelength region when exposed to ultraviolet light, and curing the ink by exposure to a source of radiant energy.

10. (Original) A method according to Claim 9, in which said radiant energy is ultraviolet.

11. (Previously presented) A method according to Claim 10, in which said acylphosphine oxide is a compound of formula (I):

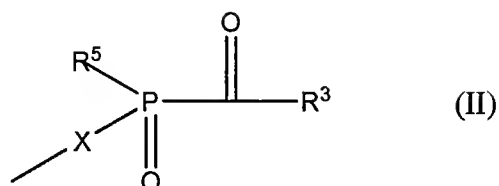


in which:

R¹ and R² are independently selected from C₁ – C₁₂ alkyl groups, C₃ – C₇ cycloalkyl groups, aryl groups, aralkyl groups, heterocyclic groups having from 3 to 7 ring atoms, of which at least one is a sulphur or nitrogen atom and groups of formula –COR³,

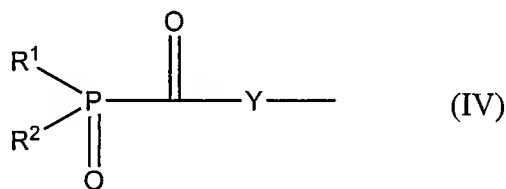
or R² represents a group of formula –OR⁴, where R⁴ represents a C₁ – C₆ alkyl group,

an aryl group, an aralkyl group or a cationic group or atom, or R² represents a group of formula (II):



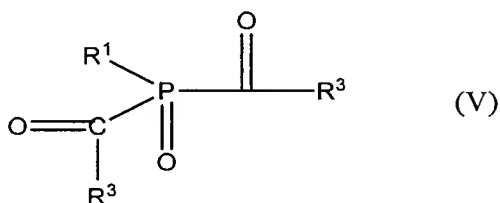
where X represents a C₁ – C₁₈ alkylene group or a biphenyldiyl group, and R⁵ represents any of the groups represented by R¹ or a group of formula –OR⁴, and

R³ represents a C₁ – C₆ alkyl group, an aryl group, a heterocyclic group having from 3 to 7 ring atoms, of which at least one is a sulphur or nitrogen atom, or a group of formula (IV):



where Y represents a C₁ – C₁₈ alkylene group a phenylene group, a cyclohexylene group or a biphenyldiyl group.

12. (Original) A method according to Claim 11, in which said acylphosphine oxide is a compound of formula (V):



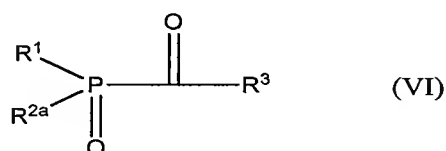
in which:

R¹ represents a C₁ – C₁₂ alkyl group, a cyclohexyl group or an aryl group; and R³ is as defined in Claim 11.

13. (Original) A method according to Claim 12, in which each R³ is independently selected from phenyl groups and phenyl groups having from 1 to 4 halogen and/or C₁ – C₆ alkyl and/or C₁ – C₆ alkoxy substituents.

14. (Previously presented) A method according to Claim 13, in which R¹ represents a C₁ – C₁₂ alkyl group or a phenyl group which is unsubstituted or has from 1 to 3 C₁ – C₆ alkyl or alkoxy substituents.

15. (Original) A method according to Claim 11, in which said acylphosphine oxide is a compound of formula (VI):



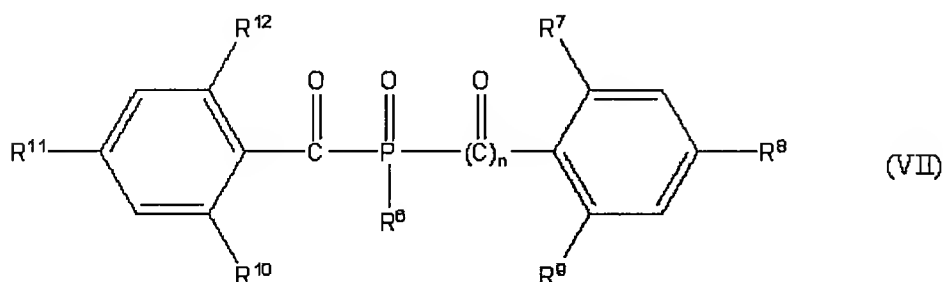
in which:

R¹ and R³ are as defined in Claim 11; and

R^{2a} represents a C₁ – C₁₂ alkyl group, a C₃ – C₇ cycloalkyl group, an aryl group, an aralkyl group, a heterocyclic group having from 3 to 7 ring atoms, of which at least one is a sulphur or nitrogen atom, or a group of formula –OR⁴, where R⁴ is defined in Claim 11.

16. (Original) A method according to Claim 11, in which said acylphosphine oxide is a compound of formula (VII):

in which:



n is 0 or 1;

R⁶ represents a C₁ – C₁₂ alkyl group, a C₁ – C₆ alkoxy group, a phenyl group or a phenyl group having from 1 to 4 substituents selected from C₁ – C₆ alkyl groups, C₁ – C₆ alkoxy groups and halogen atoms; and

R⁷, R⁸, R⁹, R¹⁰, R¹¹ and R¹² are the same as or different from each other and each represents a hydrogen atom, a C₁ – C₆ alkyl group, a C₁ – C₆ alkoxy group or a halogen atom.

17. (Currently amended) A method according to Claim 11, in which said acylphosphine oxide is 2,4,6-trimethylbenzoyl diphenylphosphine oxide, bis(2,4,6-trimethylbenzoyl)phenylphosphine oxide, ethyl 2,4,6-trimethylbenzoyl diphenylphosphinate or bis(2,6-dimethoxybenzoyl)-2,4,4-trimethylpentylphosphine oxide.

18. (Previously presented) A method according to Claim 9, in which the substrate is a paper.

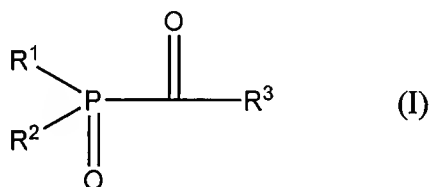
19. (Currently amended) A method according to Claim 9, in which the document is a security document.

20. (Original) A method according to Claim 19, in which the security document is a banknote.

21. (Canceled)

22. (Previously presented) A method according to Claim 12, in which R¹ represents a C₁ – C₁₂ alkyl group or a phenyl group which is unsubstituted or has from 1 to 3 C₁ – C₆ alkyl or alkoxy substituents.

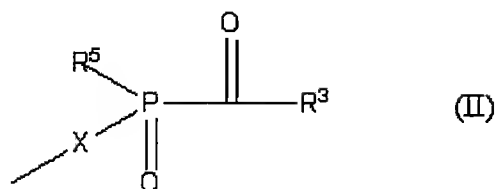
23. (Currently amended) A method according to Claim 9, in which said acylphosphine oxide is a compound of formula (I):



in which:

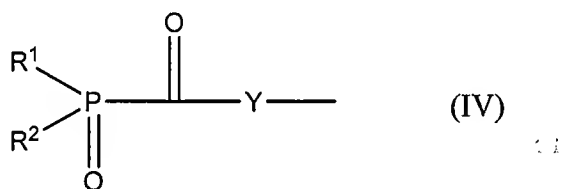
R¹ and R² are independently selected from C₁ – C₁₂ alkyl groups, C₃ – C₇ cycloalkyl groups, aryl groups, aralkyl groups, heterocyclic groups having from 3 to 7 ring atoms, of which at least one is a sulphur or nitrogen atom and groups of formula –COR³, ~~R¹ and R² are independently selected from C₁ – C₁₂ alkyl groups, C₃ – C₇ cycloalkyl groups, aryl groups, aralkyl groups, heterocyclic groups having from 3 to 7 ring atoms, of which~~

or R² represents a group of formula –OR⁴, where R⁴ represents a C₁ – C₆ alkyl group, an aryl group, an aralkyl group or a cationic group or atom, or R² represents a group of formula (II):



'where X represents a C₁ – C₁₈ alkylene group or a biphenyldiyl group, and R⁵ represents any of the groups represented by R¹ or a group of formula –OR⁴, and

R³ represents a C₁ – C₆ alkyl group, an aryl group, a heterocyclic group having from 3 to 7 ring atoms, of which at least one is a sulphur or nitrogen atom, or a group of formula (IV):



where Y represents a C₁ – C₁₈ alkylene group a phenylene group, a cyclohexylene group or a biphenyldiyl group.

24. (Currently amended) A printing ink according to Claim 3, in which $[[R^*]]$ R¹ represents a C₁ – C₁₂ alkyl group or a phenyl group which is unsubstituted or has from 1 to 3 C₁ – C₆ alkyl or alkoxy substituents.